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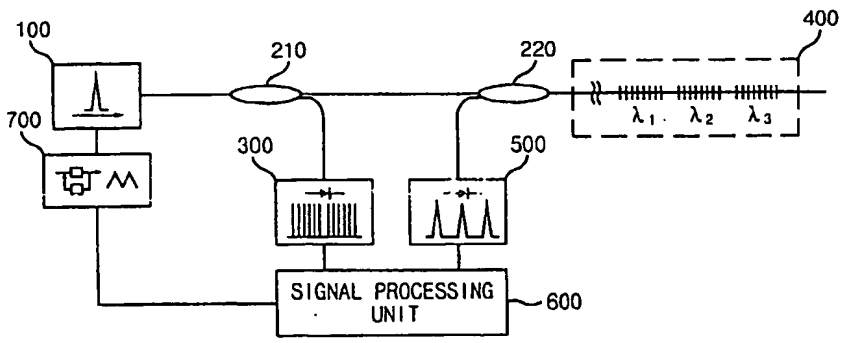
(54) Title: FIBER BRAGG GRATING SENSOR SYSTEM



(57) Abstract: The present invention discloses a fiber Bragg grating sensor system. The system according to the present invention comprises a wavelength tunable laser; a coupler for splitting output light from the wavelength tunable laser into two directions; a reference wavelength generating unit for receiving one directional output light from the coupler and for generating reference wavelengths and an absolute reference wavelength in order to measure real-time wavelengths of the wavelength tunable laser; a fiber Bragg grating array for receiving the other directional output light from the coupler and for reflecting lights at each of the wavelengths of the grating therein; a fiber grating wavelength sensing unit for measuring the time when each of the reflected lights from the fiber Bragg grating array is detected; a signal processing unit for figuring wavelength variation information with the use of the measured signals from the reference wavelength generating unit and for obtaining each of wavelengths of the detected lights from the fiber grating wavelength sensing unit; and a laser wavelength control feedback unit for applying AC voltage and DC voltage to the wavelength tunable filter in the wavelength tunable laser. Also, polarization dependency in the sensor system can be removed further installing a depolarizer or a polarization scrambler at the output end of the wavelength tunable laser. By applying the present invention, measurement accuracy of the grating sensor system 20 can be improved due to enhanced wavelength stability and suppression of polarization dependency. Therefore, the fiber Bragg grating sensor system based on the present invention would replace conventional structure/construction diagnosis systems.

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